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**Generic type vehicle braking system with electronic control - has simulator spring which can be compressed during brake boosting mode, with electrically controllable valve arrangement which is connected to pressure line**

**Patent Assignee:** BOSCH GMBH ROBERT

**Inventors:** KELLNER A; SCHUBERT P

### Patent Family

| Patent Number | Kind | Date     | Application Number | Kind | Date     | Week   | Type |
|---------------|------|----------|--------------------|------|----------|--------|------|
| GB 2292590    | A    | 19960228 | GB 9516523         | A    | 19950811 | 199612 | B    |
| DE 4430168    | A1   | 19960229 | DE 4430168         | A    | 19940825 | 199614 |      |
| JP 8067242    | A    | 19960312 | JP 95217603        | A    | 19950825 | 199620 |      |
| US 5531509    | A    | 19960702 | US 95465471        | A    | 19950605 | 199632 |      |
| GB 2292590    | B    | 19960724 | GB 9516523         | A    | 19950811 | 199633 |      |

**Priority Applications (Number Kind Date):** DE 4430168 A ( 19940825)

### Patent Details

| Patent     | Kind | Language | Page | Main IPC    | Filing Notes |
|------------|------|----------|------|-------------|--------------|
| GB 2292590 | A    |          | 26   | B60T-013/68 |              |
| DE 4430168 | A1   |          | 11   | B60T-013/16 |              |
| JP 8067242 | A    |          | 10   | B60T-013/66 |              |
| US 5531509 | A    |          | 11   | B60T-011/20 |              |
| GB 2292590 | B    |          | 1    | B60T-013/68 |              |

### Abstract:

GB 2292590 A

The system includes a pump and valve device, and a pressure line for producing boosting pressure for booster chamber for hydraulically displacing booster piston. This is followed when brake pedal displaced booster piston, in case where energy source fails. A travel simulator is arranged between brake pedal and booster piston.

The simulator has a simulator spring which can be compressed during brake boosting mode, with an electrically controllable valve arrangement which is connected to pressure line. A return line from pressure line leads to reservoir.

USE/ADVANTAGE - In vehicle braking system. Exclusion damage due to overheating.

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GB 2292590 B

A vehicle brake system comprising a main cylinder for supplying wheel brake cylinders with brake pressure, a hydraulic brake booster which is assigned to the main cylinder for activating it and which has a booster piston which can be displaced in a booster chamber in the direction of the main cylinder, a hydraulic energy source which has a reservoir, a pump and valve means and a pressure line for producing boosting pressure for the booster chamber for hydraulically displacing the booster piston, a brake pedal for emergency displacement of the booster piston when the energy source fails, a travel simulator which is arranged between the brake pedal and the booster piston and which has a simulator spring which can be compressed during brake boosting mode, an electrically controllable valve arrangement, which is connected to the pressure line and from which a return line leads to the reservoir, for adjusting boosting pressure in the booster chamber, a sensor which can be adjusted by means of the brake pedal in order to output an electronic signal variable as a function of the activation of the brake pedal, and an electronic control unit which is connected to the sensor in order to produce an output signal in dependence on the sensor signal for controlling the valve arrangement electrically when the brake pedal is activated, wherein the valve arrangement is constructed as a throttle valve which normally has its widest flow area and the booster chamber is permanently connected to the pressure line.

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POWERED BY **Dialog****Hydraulically operated braking system e.g. for vehicle****Patent Assignee:** TOYOTA JIDOSHA KK**Inventors:** ISONO H; MIZUTANI Y**Patent Family**

| Patent Number | Kind | Date     | Application Number | Kind | Date     | Week   | Type |
|---------------|------|----------|--------------------|------|----------|--------|------|
| EP 950593     | A2   | 19991020 | EP 99106961        | A    | 19990408 | 199949 | B    |
| JP 2000203413 | A    | 20000725 | JP 98364575        | A    | 19981222 | 200040 |      |
| KR 99083250   | A    | 19991125 | KR 9913537         | A    | 19990416 | 200055 |      |

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**Patent Details**

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| JP 2000203413  | A    |          | 36   | B60T-013/18 |              |
| KR 99083250  | A    |          |      | B60T-013/74 |              |

**Abstract:**

EP 950593 A2

**NOVELTY** The system has a brake operating member (10) operable by an operator. A master cylinder (12,300,500,600) includes a pressurizing piston (34,322,324,504, 506) operatively connected to the brake operates member and partially defines a pressurizing chamber (30, 32,302,304,508,510), the pressurizing piston is moved by the brake operating member to pressurize a fluid in the pressurizing chamber.

**DETAILED DESCRIPTION** A brake cylinder (22-28) actuated by the pressurized fluid received from the master cylinder. An assisting device (81,260-272,109,538,612) for applying to the pressurizing piston an assisting drive force which is different than a primary drive force to be applied to the pressurizing piston on the basis of a brake operating force acting on the brake operates member, the assisting device is electrically controllable to control the assisting drive force.

**USE** For vehicle.

**ADVANTAGE** produces assisting force in non proportional relationship with brake operating force.

DESCRIPTION OF DRAWING(S) The figure shows a circuit diagram showing a hydraulically operated braking system constructed according to a first embodiment of the invention.

Brake operating member (10)

Master cylinder (12,300,500,600)

Brake cylinder (22-28)

Pressurizing chamber (30, 32,302,304,508,510)

Pressurizing piston (34,322,324,504, 506)

Assisting device (81,260-272,109,538,612)

pp; 67 DwgNo 1/26

Derwent World Patents Index

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